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BHCTP Monthly Discharge Monitoring Report

Month:	January-18		
Facility:	Central Treatment Plant		
Location:	Bunker Hill Superfund Site		
Contract Number:	W912DW-16-C-0012	Amec Foster Wheeler	
Total Flow For The Month From 006 Outfall:		55,887,000	gallons
Sludge pumping to CIA sludge pond:		1,014,000	gallons
Total Flow From Kellogg Tunnel:		56,555,500	gallons
Percent of Influent Successfully Treated:		100.0%	

13 sample days * 6 parameters (Pb, Cd, Zn, Mn, TSS & pH) = 78 potential exceedances
78 - 0 exceedances = 78 78/78 = 100%

Results of Sampling Efforts:

All sampling has been performed in accordance with specifications and the Sampling and Analysis Plan.

Performance Evaluation (PE) sampling was not performed for this reporting period.

Trip blank and rinsate sampling was performed, with the results being reported on the 'PTM-004,RB,TB' page of this DMR.

Highlights of Plant Maintenance and/or Plant Optimization:

01-01-18 Performed monthly fire extinguisher inspection. All CTP fire extinguishers are fully charged and in good working condition at this time.

01-01-18 Performed monthly pump and motor inspection. All CTP pumps and motors are in good condition at this time.

01-03-18 Balancing Services performed the six month preventative maintenance inspections on all pumps and motors. All pumps and motors were found to be in good working condition. PM inspection report was submitted for review.

01-04-18 05:30 - 11:30 Operators performed a lined storage pond pumping event to decreased the water volume. The lined storage pond level is being decreased to support the effluent tie-in project.

01-04-18 11:30 Operators removed the clarifier cathodic protection system from service. Components of the system were found contacting the clarifier rake system. Cathodic protection wiring within the clarifier have separated from the mounting brackets. Discrepancy report #019 detailing the issue has been submitted to AFW/Wood for review.

01-05-18 Operators placed the CTP into short term shutdown mode as requested by AFW/Wood and North Wind. The CTP was placed into shutdown mode in support of the effluent tie-in project. KT flow was diverted to the lined storage pond at 09:30 as requested by North Wind on site supervisor.

01-09-18 Operators performed the monthly no load emergency generator run test. The emergency generator operated for one half hour as programmed with no issues or errors to report.

01-11-18 19:30 Operators received an auto-dialer callout due to power outage during the snow storm. Operators had difficulty restarting the Aerator drive motor. The Aerator drive motor would operator for approximately 5 seconds and shut down. The LWTPO was called. The LWTPO suggested removing all other pumps and motors from service and restarting the Aerator drive motor. The Aerator drive motor started and remained in operation. All other pumps and motors were restarted with no issues to report.

01-12-18 02:00 Operators responded to an auto-dialer alarm. The flocculant transfer pump failed to run. Operators restarted the flocculant transfer pump and tested the pump controls. No issues were found. The pump was placed

back into full operation with no further issues to report.

01-18-18 Operators placed the CTP into short term shutdown in support of the lime silo B water pipe repair project.

01-18-18 CTP operating staff de-energized the lime silo B water pipe unit and performed lockout/tagout on all components associated with the water pipe repair project.

01-18-18 B & L Construction performed the lime silo B water pipe replacement work.

01-23-18 B & L Construction performed repairs on the Polishing Pond water line in lime silo B. All water pipes are in good working condition at this time with no issues.

01-23-18 Operators performed the monthly full load emergency generator run test. The emergency generator operated all CTP components for one hour as programmed with no issues or errors to report.

01-23-18 The #1 lime slurry injection pump was removed from service, #2 placed into service. The discharge pipe located directly above the #1 pump was found leaking and will be replaced asap. The discharge pipe will be replaced with a discharge pipe from inventory stock. One additional replacement pipe will remain in stock after this pipe is replaced.

01-25-18 08:00 The Kellogg Tunnel flow meter building had no electrical supply. The mine is performing electrical work in this area. CTP operators will inspect the flow meter and power supply on Monday January 29th. The KT flow meter is equipped with a battery power supply unit to maintain totalizing flow during power interruptions.

01-31-18 T&L Enterprises electrician performed an inspection and testing on the Aeration basin drive motor. An inspection report will developed and submitted to the OMER manager.

01-31-18 T& L Enterprises electrician performed the lime silo A dust collection motor connection and testing. The dust system motor is operating correctly with no issues at this time.

01-31-18 T&L Enterprises electrician developed a voltage testing procedure for the cathodic protection system as as suggested by the CPS manufacturer. CTP operators will perform voltage tests on a weekly basis.

01-31-18 Performed monthly reset of the KT and treated outfall flow meters. Documented monthly totals on the KT & 006 flow page of this report.

- The Kellogg Tunnel discharge flow increased by 13% from January 2017, from 49.3 mg to 56.5 mg.

- The Kellogg Tunnel zinc concentration increased by 22% from January 2017, from an average of 53 mg/L to 68 mg/L.

- The CTP operating pH set point was increased from 8.3 to 8.5 during this reporting period.

- The flocculent dosage was increased from approximately 1.4 PPM to 2.0 PPM during lined storage pond pumping events.

- The CTP sludge recycle rate remained at 400 gpm.

- CTP operators received two off-shift auto dialer call-out alarms caused by electrical outages.

- CTP operators performed nine pumping events from the Lined Storage Pond.

- CTP operators verified Aeration Basin pH probe and grab sample values twice per day.

No significant lessons to report for last month.

Lessons Learned

MONITORING PERIOD					
YEAR	MO	DAY	YEAR	MO	DAY
2018	1	1	2018	1	31

PARAMETER		Quantity or Loading			Quality or Concentration					
		MONTHLY AVERAGE	DAILY MAXIMUM	UNITS	MINIMUM	MONTHLY AVERAGE	DAILY MAXIMUM	UNITS	FREQUENCY OF ANALYSIS	SAMPLE TYPE
pH	Sample Measurement				6.90		7.20		Continuous	Meter
	Permit Required				6.0		10.0			
Flow Thru Treatment Plant	Sample Measurement	1.80	2.70	mgd						
	Permit Required		Daily							
Lead Total - Pb Effluent	Sample Measurement	0.04	0.06	lbs/day		0.003	0.003	mg/L	three samples/ week	Comp 24
	Permit Required	14.8	37.0			0.30	0.60	mg/L		
Zinc Total - Zn Effluent	Sample Measurement	5.04	10.26	lbs/day		0.31	0.46	mg/L	three samples/ week	Comp 24
	Permit Required	36.2	91.3			0.73	1.48	mg/L		
Cadmium - Cd Effluent	Sample Measurement	0.06	0.095	lbs/day		0.004	0.005	mg/L	three samples/ week	Comp 24
	Permit Required	2.40	6.10			0.050	0.100	mg/L		
Manganese - Mn Effluent	Sample Measurement	370	964	lbs/day		22.3	47.0	mg/L	three samples/ week	Comp 24
	No Permit Required					N/A	N/A	mg/L		
Total Suspended Solids - TSS	Sample Measurement	17.1	38	lbs/day		1.0	2.0	mg/L	three samples/ week	Comp 24
	Permit Required	985	1907			20	30	mg/L		

PREPARED BY: GARY FULTON

REVIEWED BY: BRIAN JOHNSON

NPDES DISCHARGE POINT 006
CENTRAL TREATMENT PLANT
MONTH: Jan-18

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		LOADING
	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day		mgd	mg/L	lbs/day	kg/day
1	0.0026	0.018	0.225	1.58	0.0029	0.02	15.0	105	7.00	0.84	0.4	2.80	1.27
2		0.019		1.67		0.02		111		0.89		2.97	1.35
3	0.0026	0.018	0.251	1.74	0.0024	0.02	6.24	43.2	7.00	0.83	0.8	5.54	2.51
4		0.018		1.76		0.02		43.7		0.84		5.61	2.54
5	0.0026	0.048	0.403	7.47	0.0038	0.07	4.28	79.3	7.00	2.22	2.0	37.1	16.8
6		0.046		7.20		0.07		76.4		2.14		35.7	16.2
7		0.050		7.68		0.07		81.5		2.28		38.1	17.3
8	0.0026	0.049	0.267	4.99	0.0043	0.08	26.0	486	7.00	2.24	1.2	22.4	10.2
9		0.050		5.17		0.08		503		2.32		23.2	10.5
10	0.0026	0.050	0.242	4.67	0.0040	0.08	33.8	652	6.90	2.31	1.0	19.3	8.74
11		0.039		3.66		0.06		511		1.81		15.1	6.85
12	0.0023	0.028	0.189	2.27	0.0045	0.05	24.6	296	7.10	1.44	1.6	19.2	8.72
13		0.021		1.72		0.04		224		1.09		14.6	6.60
14		0.019		1.54		0.04		200		0.98		13.0	5.90
15	0.0026	0.021	0.301	2.39	0.0047	0.04	10.2	81.1	7.10	0.95	0.6	4.77	2.16
16		0.032		3.67		0.06		124		1.46		7.32	3.32
17	0.0026	0.028	0.293	3.14	0.0047	0.05	3.88	41.6	7.20	1.28	0.4	4.29	1.94
18		0.022		2.52		0.04		33.3		1.03		3.44	1.56
19	0.0026	0.014	0.291	1.53	0.0040	0.02	2.67	14.0	7.00	0.63	0.6	3.14	1.43
20		0.017		1.85		0.03		17.0		0.76		3.82	1.73
21		0.051		5.67		0.08		52.0		2.33		11.7	5.30
22	0.0026	0.050	0.231	4.43	0.0046	0.09	16.4	314	7.00	2.30	0.6	11.5	5.22
23		0.054		4.78		0.10		339		2.48		12.4	5.63
24	0.0026	0.058	0.404	9.09	0.0040	0.09	37.3	839	7.10	2.70	1.4	31.5	14.3
25		0.058		9.02		0.09		833		2.68		31.3	14.2
26	0.0026	0.058	0.457	10.26	0.0018	0.04	40.0	898	7.00	2.69	1.4	31.4	14.3
27		0.056		9.92		0.04		868		2.60		30.4	13.8
28		0.054		9.45		0.04		827		2.48		29.0	13.1
29	0.0026	0.051	0.447	8.77	0.0040	0.08	44.9	881	7.10	2.35	0.8	15.7	7.12
30		0.054		9.21		0.08		925		2.47		16.5	7.48
31	0.0026	0.053	0.362	7.42	0.0040	0.08	47.0	964	7.10	2.46	1.4	28.7	13.02
Total	0.036	1.204	4.363	156.217	0.054	1.751	312.270	11464.1	98.600	55.878	14.200	531.423	241.008
Sample Events	14	31	14	31	14	31	14	31	14	31	14	31	31
Daily Average	0.003	0.039	0.312	5.04	0.004	0.056	22.3	370	7.04	1.80	1.01	17.1	7.77
Lab Detection Limit	**0.0026**		**0.002**		**0.0004**		**0.0025**		**0.01**		**0.080**		

MIN	0.002	0.014	0.189	1.525	0.002	0.017	2.670	13.993	6.900	0.628	0.400	2.802	1.271
MAX	0.003	0.058	0.457	10.259	0.005	0.095	47.000	963.633	7.200	2.695	2.000	38.105	17.281

Notes:
(X mg/L) * (1 kg/10^6 mg) * (2.205 lbs/kg) * (3.785 L/gal) * (10^6 gal/Mgal) * (Y Mgal/day) = (X) * (Y) * (8.345) in lbs/day
(X lbs/day) * (1 kg/2.205 lbs) = (X) / (2.205) in kg/day

verified by Brian Johnson, 02/12/18

KELLOGG TUNNEL DISCHARGE
CENTRAL TREATMENT PLANT
MONTH: Jan-18
Data from SVL

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	006 FLOW	TSS		
	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day		mgd	mg/L	lbs/day	kg/day
1	0.491	3.44	76.5	536	0.147	1.03	28.2	198	2.90	0.84	34	238	108
2		3.65		568		1.09		209		0.89		253	115
3		3.40		530		1.02		195		0.83		236	107
4	0.494	3.46	79.6	558	0.149	1.04	28.8	202	2.90	0.84	33	231	105
5		9.15		1,475		2.76		534		2.22		611	277
6		8.82		1,422		2.66		514		2.14		589	267
7		9.41		1,517		2.84		549		2.28		629	285
8	0.570	10.65	58.4	1,092	0.0734	1.37	106	1,981	3.30	2.24	74	1,383	627
9		11.04		1,131		1.42		2,052		2.32		1,433	650
10		10.99		1,126		1.41		2,043		2.31		1,426	647
11	0.534	8.07	81.5	1,231	0.162	2.45	28.5	430	3.00	1.81	21	317	144
12		6.42		979		1.95		342		1.44		252	114
13		4.86		741		1.47		259		1.09		191	87
14		4.34		663		1.32		232		0.98		171	77
15	0.533	4.24	76.1	605	0.150	1.19	28.1	223	2.90	0.95	33	262	119
16		6.51		929		1.83		343		1.46		403	183
17		5.71		816		1.61		301		1.28		354	160
18	0.588	5.05	71.9	618	0.142	1.22	26.9	231	2.90	1.03	33	284	129
19		3.08		377		0.74		141		0.63		173	78
20		3.75		458		0.91		171		0.76		210	95
21		11.45		1,400		2.76		524		2.33		642	291
22	0.592	11.35	52.2	1,001	0.0707	1.36	91.5	1,755	3.20	2.30	76	1,457	661
23		12.25		1,080		1.46		1,894		2.48		1,573	713
24		13.31		1,174		1.59		2,058		2.70		1,709	775
25	0.572	12.77	55.3	1,234	0.0771	1.72	92.9	2,074	3.30	2.68	64	1,429	648
26		12.84		1,241		1.73		2,085		2.69		1,437	652
27		12.41		1,200		1.67		2,016		2.60		1,389	630
28		11.83		1,144		1.59		1,921		2.48		1,323	600
29	0.636	12.49	57.0	1,119	0.0727	1.43	105	2,061	3.30	2.35	113	2,218	1,006
30		13.11		1,175		1.50		2,164		2.47		2,329	1,056
31		13.04		1,169		1.49		2,153		2.46		2,317	1,051
Total	5.01	262.89	608.50	30307.33	1.04	49.65	535.90	31857.19	27.70	55.88	481.00	27470.28	12458.18
Sample Events	9	31	9	31	9	31	9	31	9	31	9	31	31
Daily Average	0.557	8.5	67.6	978	0.116	1.60	59.5	1,028	3.08	1.80	53	886	402

Notes:
(X mg/L) * (1 kg/10^6 mg) * (2.205 lbs/kg) * (3.785 L/gal) * (10^6 gal/Mgal) * (Y Mgal/day) = (X) * (Y) * (8.345) lbs/day
(X lbs/day) * (1 kg/2.205 lbs) = (X) / (2.205) kg/day

verified by Brian Johnson, 02/12/18

PTM Effluent at Lined Storage Pond **Month: Jan-18**
CENTRAL TREATMENT PLANT

DATE	LEAD mg/L	ZINC mg/L	CADMIUM mg/L	pH s.u. CTP Lab	TSS mg/L
01/11/18	0.0544	10.6	1.11	7.30	1.2
01/25/18	0.0088	10.8	1.02	7.30	0.2

RINSATE AND TRIP BLANKS **Month: Jan-18**
CENTRAL TREATMENT PLANT

Rinsate and Trip Blank samples will be taken approximately every 20 QC events, or one each per month.

LOCATION Rinsate & Trip Blank	DATE	SAMPLE	LEAD mg/L	ZINC mg/L	CADMIUM mg/L
Kellogg tunnel Discharge		RB-12-11-17	<0.008	<0.010	<0.002
Trip Blank (D.I.water)		TB-12-11-17	<0.008	<0.010	<0.002

verified by Brian Johnson, 02/12/18

Bunker Hill Central Treatment Plant

Daily log January 2018

				AERATION BASIN					CLARIFIER						DISCHARGE 006								RECYCLE SG		LIME SLURRY			SLUDGE PUMP		POND PUMP		SLUDGE GUN TEST		LINED POND
		INFLUENT KT			a.m.		p.m.		a.m.		p.m.				a.m.		p.m.		DO	1/wk							Injection Valve	Est.	600gpm					ESTIMATED
DATE	Operators	GPM	pH	SET	pH1	grab	pH1	grab	pH2	grab	pH2	grab	TURB	TEMP	pH3	grab	pH3	grab	PPM	TEMP	TURB	FLOW	SG	GPM	SG	%solid	Closed/Open	pump #	min	ON	OFF	10' Out	20' Out	Elevation (mg)
1/1	SB	632	2.49	**8.5**	8.6	8.5	8.5	8.5	7.9	8.0	7.9	8.0	0.98	40	7.3	7.2	7.2	7.2			0.84	0.84	1.040	400	1.067	10.4	310/20	3	30					2270.0 (1.50mg)
1/2	GF,SB,GC			**8.5**	8.6	8.5	8.5	8.5	7.9	8.0	8.0	7.9	0.60	37	7.3	7.0	7.3	7.1			0.55	0.89	1.038	400	1.067	10.4	307/20	3	20					2270.0
1/3	GF,SB,GC			**8.5**	8.5	8.5	8.6	8.6	7.9	8.0	8.0	7.9	0.39	36	7.2	7.1	7.2	7.2	11.09	5.7	0.43	0.83	1.040	400	1.067	10.4	290/20	3	30					2270.0
1/4	GF,SB,GC	640	2.50	**8.5**	8.5	8.5	8.5	8.5	8.0	8.0	8.0	7.9	0.57	38	7.2	7.1	7.4	7.2			0.34	0.84	1.039	400	1.067	10.4	304/20	3	60	#3 05:30	11:30			2270.5 (1.8)
1/5	GF,GC			8.3	8.4	8.4	8.3	8.3	7.9	8.0	8.0	8.0	0.50	38	7.3	7.2	7.3	7.2			0.46	2.22	1.050	400	1.066	10.2	220/35	3	120					2269.5 (1.25mg)
1/6	GC			8.3	8.3	8.3	8.3	8.3	7.9	7.9	7.9	7.8	0.41	43	7.3	7.3	7.4	7.3			0.36	2.14	1.045	400	1.066	10.2	242/35	3	90					2270.0 (1.5mg)
1/7	SB			8.3	8.3	8.3	8.3	8.3	7.8	7.9	7.8	7.9	0.95	47	7.3	7.1	7.3	7.2			0.78	2.28	1.045	400	1.065	10.1	226/35	3	90					2270.0
1/8	GF,SB	1646	3.09	8.3	8.3	8.3	8.3	8.3	7.8	7.9	7.8	7.6	1.10	46	7.3	7.0	7.2	7.2			1.05	2.24	1.043	400	1.065	10.1	192/35	3	60					2270.0
1/9	GF,SB,GC			8.3	8.3	8.3	8.3	8.3	7.8	7.8	7.8	7.9	1.56	42	7.2	7.1	7.2	7.2			1.37	2.32	1.053	400	1.072	11.1	187/35	3	90					2270.5 (1.75mg)
1/10	GF,SB,GC			8.3	8.3	8.3	8.4	8.4	7.8	7.9	7.9	7.8	1.74	50	7.2	7.3	7.3	7.3	9.85	6.5	1.62	2.31	1.056	400	1.068	10.5	193/35	3	125	#3 08:00	13:30			2271.0 (2.25mg)
1/11	GF,SB,GC	674	2.67	**8.5**	8.5	8.5	8.5	8.5	8.0	8.0	7.9	7.7	1.60	44	7.3	7.2	7.3	7.2			1.58	1.81	1.039	400	1.069	10.7	390/35	3	105	#3 05:00	13:30			2270.8 (2.13gm)
1/12	GC			**8.5**	8.6	8.6	8.5	8.5	7.9	7.9	7.8	7.8	1.80	42	7.3	7.1	7.3	7.1			1.38	1.44	1.030	400	1.069	10.7	313/20	3	0					2269.0 (1.0mg)
1/13	GC			**8.5**	8.6	8.6	8.5	8.5	7.8	7.7	7.8	7.8	1.42	40	7.2	7.3	7.3	7.2			1.50	1.09	1.030	400	1.069	10.7	340/20	3	0					2269.0
1/14	SB			**8.5**	8.5	8.5	8.5	8.6	7.8	7.9	7.9	8.0	1.10	42	7.3	7.2	7.3	7.2			1.03	0.98	1.032	400	1.068	10.5	328/20	3	0					2269.0
1/15	SB	722	2.56	**8.5**	8.5	8.5	8.5	8.4	7.9	7.9	8.1	8.0	0.71	38	7.3	7.2	7.4	7.2			0.60	0.95	1.037	400	1.067	10.4	333/20	3	0	#3 08:30	13:40			2270.0 (1.50mg)
1/16	GF,SB			**8.5**	8.5	8.5	8.6	8.5	8.0	7.9	7.9	8.0	0.51	38	7.3	7.2	7.4	7.2			0.49	1.46	1.044	400	1.067	10.4	318/20	3	0	#3 06:00	10:30			2269.0 (1.0mg)
1/17	GF,SB			**8.5**	8.5	8.4	8.4	8.3	8.0	8.0	8.0	8.0	0.60	36	7.2	7.1	7.2	7.2	10.18	6.2	0.51	1.28	1.044	400	1.067	10.4	349/20	3	0					2268.5 (0.75mg)
1/18	GF,SB	722	2.32	**8.5**	8.5	8.5	8.5	8.4	7.8	7.9	7.9	7.8	0.55	36	7.1	7.1	7.2	7.1			0.47	1.03	1.046	400	1.067	10.4	304/20	3	15					2268.5
1/19	GF			**8.5**	8.5	8.4	8.5	8.5	7.9	7.8	7.9	7.9	0.55	38	7.2	7.2	7.2	7.1			0.50	0.63	1.046	400	1.066	10.2	318/20	3	15					2269.5 (1.25mg)
1/20	SB			8.3	8.5	8.5	8.4	8.5	8.0	8.0	8.0	8.0	0.62	42	7.4	7.2	7.4	7.3			0.41	0.76	1.061	400	1.067	10.4	120/20	3	120					2269.5
1/21	SB			8.3	8.3	8.4	8.4	8.3	7.9	7.9	7.9	7.9	0.68	43	7.3	7.2	7.4	7.2			0.49	2.33	1.051	400	1.069	10.7	236/35	3	60					2269.5
1/22	GF,SB	1770	2.91	8.3	8.4	8.3	8.3	8.3	7.7	7.9	7.8	7.9	0.85	43	7.3	7.2	7.3	7.2			0.70	2.30	1.053	400	1.067	10.4	247/35	3	60					2269.5
1/23	GF,SB			8.3	8.2	8.2	8.5	8.4	7.8	7.9	7.7	7.9	1.26	47	7.2	7.2	7.2	7.2			1.13	2.48	1.050	400	1.067	10.4	254/35	3	60	#3 06:00	13:30			2270.5 (1.8mg)
1/24	GF,SB,GC			8.3	8.6	8.6	8.3	8.3	7.8	7.9	7.8	7.9	1.60	49	7.3	7.2	7.3	7.2	10.11	5.9	1.49	2.70	1.052	400	1.066	10.2	346/30	3	80	#3 04:50	13:30			2270.5
1/25	GF,SB,GC	1805	2.92	8.3	8.4	8.3	8.4	8.4	7.8	7.8	7.8	7.9	1.90	48	7.3	7.2	7.3	7.1			1.87	2.68	1.055	400	1.066	10.2	260/35	3	60	#3 05:00	13:30			2270.0 (1.50mg)
1/26	GF,GC			8.3	8.3	8.3	8.4	8.4	7.8	7.8	7.8	7.9	2.03	45	7.2	7.3	7.3	7.3			1.73	2.69	1.053	400	1.068	10.6	285/35	3	70	#3 07:00	13:30			2269.7 (1.35mg)
1/27	GC			8.3	8.3	8.3	8.3	8.3	7.7	7.9	7.7	7.8	2.02	46	7.2	7.3	7.3	7.3			1.98	2.60	1.051	400	1.069	10.7	279/35	3	70					2269.3 (1.15mg)
1/28	SB			8.3	8.3	8.4	8.3	8.4	7.7	7.8	7.7	7.8	2.15	45	7.2	7.2	7.3	7.2			1.95	2.48	1.050	400	1.069	10.7	263/35	3	70					2269.3 (1.15mg)
1/29	GF,SB	1722	3.05	8.3	8.3	8.3	8.3	8.3	7.6	7.8	7.7	7.9	2.30	45	7.3	7.2	7.3	7.2			2.16	2.35	1.046	400	1.069	10.7	245/35	3	45					2269.3 (1.15mg)
1/30	GF,GC			8.3	8.3	8.3	8.3	8.3	7.6	7.9	7.7	7.9	2.00	50	7.2	7.3	7.2	7.2	10.80	6.0	1.87	2.47	1.063	400	1.071	11.0	247/35	3	70					2269.5 (1.25mg)
1/31	GF,GC			8.3	8.3	8.3	8.3	8.3	7.9	8.0	7.8	7.9	2.15	48	7.2	7.2	7.1	7.2			1.80	2.46	1.057	400	1.071	11.0	256/35	3	75					2270.0 (1.50mg)
Averages:				8.38	8.41	8.40	8.41	8.39	7.84	7.89	7.86	7.87	1.20	43	7.25	7.19	7.27	7.19	PPM	*c	1.08	1.80	1.05						55					
Notes:																												1690					
	12-28-17 05:30 KT flow decreased from approximate 1660 gpm to 1440 gpm.																											1,014,000	Gallons				
	12-28-17 11:00 KT flow decreased from approximately 1440 gpm to 640 gpm.																																
	01-04-18 05:30-11:30 Diverted KT flow of 640 gpm to the lined storage pond. #3 lined pond pump was activated to lower the level of the pond in preparation for the temporary tie-in project.																																
	01-04-18 16:30 KT flow increased from 640 gpm to approximately 1600 gpm. pH set point reduced to 8.30 from 8.50.																																
	01-05-18 11:00 Diverted KT flow of approximately 1650 gpm to the lined storage pond as requested by North Wind.																																
	01-05-18 09:30 KT flow of approximately 1650 gpm to line pond for North Wind pipe fusion work. 11:15 KT flow diverted to CTP as directed by Don Ferguson and North Wind.																																
	01-10-18 08:00-13:30 Diverted KT flow of 1650 gpm to the lined storage pond. #3 lined pond pump was activated to lower the level of the pond in preparation for the lime silo B water pipe repair project.																																
	01-11-18 The KT flow decreased from approximately 1650 gpm to approximately 650 gpm during the night.																																
	01-11-18 05:00-13:30 Diverted KT flow of 650 gpm to the lined storage pond. #3 lined pond pump was activated to lower the level of the pond in preparation for the lime silo B water pipe repair project.																																
	01-11-18 19:30 to 20:30 KT flow of approximately 650 gpm to lined pond during Aerator motor failure.																																
	01-12-18 01:30 Floc transfer pump failed to start.																																
	01-15-18 08:30-13:00 Diverted KT flow of 722 gpm to the lined storage pond. #3 lined pond pump was activated to lower the level of the pond in preparation for the lime silo B water pipe repair project.																																
	01-16-18 06:00-10:30 Diverted KT flow of 722 gpm to the lined storage pond. #3 lined pond pump was activated to lower the level of the pond in preparation for the lime silo B water pipe repair project.																																
	01-18-18 05:30-15:00 KT low flow of approximately 750 gpm to lined storage pond. CTP placed into shutdown mode to allow lime system water pipe repair contractor to perform the repairs.																																
	01-20-18 KT flow increased from approximately 722 gpm to approximately 1810 gpm during operators off hours. KT flow was gravity flow only from 01-11-18 to 01-20-18.																																
	01-23-18 06:00 - 13:30 Diverted KT flow of approximately 1750 gpm to the lined storage pond. #3 L.P. pump was activated to lower the level of the pond. pH set point increased to 8.40 from 8.30.																																
	01-23-18 06:45 #1 lime injection pump was removed from service and the #2 lime injection pump was placed into service. The discharge pipe directly above the #1 pump was found leaking and will be replaced.																																
	01-24-18 04:50 - 13:30 Diverted KT flow of approximately 1820 gpm to the lined storage pond. #3 L.P. pump was activated to lower the level of the pond. pH set point increased to 8.40 from 8.30.																																
	01-25-18 05:00 - 13:30 Diverted KT flow of approximately 1800 gpm to the lined storage pond. #3 L.P. pump was activated to lower the level of the pond. pH set point increased to 8.40 to 8.30.																																
	01-26-18 07:00 - 13:30 Diverted KT flow of approximately 1800 gpm to the lined storage pond. #3 L.P. pump was activated to lower the level of the pond. pH set point increased to 8.40 to 8.30.																																

CENTRAL TREATMENT PLANT

MISCELLANEOUS FLOWS

Month : **Jan-18**

Date	**KT Flow Meter Reading**
12/31/2017	0
1/31/2018	56,555,500
Total	56,555,500

Date	**006 Flow Meter Reading**
12/31/2017	0
1/31/2018	55,887,000
Total	55,887,000

Lined Storage Pond Influent Flows

Sweeny Pump Station Reading

Date	#1 Pump	620 gpm	#2 Pump	500 gpm
12/31/2017	170.0	Hours	785.0	Hours
1/31/2018	170.0	Hours	785.0	Hours
Total Hours	0.0	Hours	0.0	Hours
Total Flow for 004/Sweeny For The Month =			0	Gallons

PTM Discharge Flow

Date	Flow (gpm)
01/11/18	20.0
01/25/18	20.0

Date	**Lined Storage Pond Water Level**			
12/31/2017	1,500,000	gal	Elev. =	2270.0
1/31/2018	1,500,000	gal	Elev. =	2270.0

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Old Mine Line Discharge Flow

Date	Flow (gpm)
NA	NA

2017-May 03 to 2018-May 02 BHCTP LIME USAGE AFW/WOOD

	Silo A						Silo B						Total	
Month	Initial Level	Final Level	Diff. (ft)	Diff. (tons)	Tons Added	Net Tons	Initial Level	Final Level	Diff. (ft)	Diff. (tons)	Tons Added	Net Tons	Net Tons	Tons/Day
Jan 1 - Jan 31	11.70	13.30	-1.6	-8.6	72.20	63.6	16.30	16.30	0.0	0.0	0.00	0.0	63.6	2.05
				Silo A	**72.20**					**Silo B**	**0.00**		63.6	
					Tdl Tons Purchased	**72.20**							**Average**	**2.05**

NOTES:
08-22-17 Slaker B (Silo B) removed from service, Slake A (Silo A) placed into service - Six Month Rotation- Lime loop #2 off, Lime loop #1 on
Six Month Rotation - January 1, 2018 A= 11.7 B = 16.3
01-23-18 Lime loop #1 removed from service, lime loop #2 placed into service. #1 lime loop discharge pipe found leaking, will be replaced as
01-24-18 Lime loop # repaired and placed into service as the primary lime slurry injection system. Lime loop #2 was also repaired.

2005	Average	2.59
2006	Average	3.23
2007	Average	2.76
2008	Average	4.78
2008 EXT.	Average	3.24
2009-2010	Average	2.16
2010-2011	Average	4.31
2011-2012	Average	3.93
2012 Ext	Average	2.70
2013-2014	Average	2.40
2014/Op #1 2/11/14-8/10/14	Average	3.33
14-15/Op #2 8/11/14-2/10/15	Average	1.91
2015 Op #3 2/11/15-8/10/15	Average	2.59
15-16 Op #4 8/11/15-2/10/16	Average	1.50
2016 Op #4 ext 2/11/16-8/10/16	Average	2.49
16-17 Ext 8/11/16-1/10/17	Average	1.68
Jan - May 2 1/11/17-05-02-17	Average	0.00
2017 5-03-17-12-31-1	Average	3.86

Lime Daily Use - 7 Days

	Silo A						Silo B						Total	
	Initial Level	Final Level	Diff. (ft)	Diff. (tons)	Tons Added	Net Tons	Initial Level	Final Level	Diff. (ft)	Diff. (tons)	Tons Added	Net Tons	Net Tons	Tons/Day
01/08-01/15	9.90	13.90	-4.0	-21.6	33.70	12.1	16.30	16.30	0.0	0.0	0.00	0.0	12.1	1.73

Lime Silo A Depth Readings

Date	Prior	After	Tons Received	Tons/ft
1/8/2018	9.9	14.4	33.70	7.49
1/29/2018	8.8	13.8	38.50	7.70
1 Month Average:				**7.59**

Lime Silo B Depth Readings

Date	Prior	After	Tons Received	Tons/ft

Flocculant Received

10/19/2017 2200 lbs
12/12/2017 4400 lbs
01-29-18 SA Orderd Flocc

LIME DEMAND TRACKING

Year	Month	Lime (tons)	KT flow (mg)	Lime Demand (g/L)	
2006	Jan.	70.2	56.0	0.30	
	Feb.	69.9	51.2	0.33	
	March	96.3	56.3	0.41	
	April	107.5	72.0	0.36	
	May	235.4	72.0	0.78	peak
	June	114.6	68.3	0.40	
	July	100.4	64.0	0.38	
	Aug.	118.2	64.1	0.44	
	Sept.	38.4	54.5	0.17	
	Oct.	69.5	57.6	0.29	
	Nov.	71.3	55.2	0.31	
	Dec.	78.2	60.5	0.31	
2007	Jan.	66.0	56.3	0.28	
	Feb.	51.8	50.5	0.25	
	March	81.7	65.4	0.30	
	April	127.9	66.6	0.46	
	May	154.0	63.2	0.58	peak
	June	94.1	57.9	0.39	
	July	107.0	58.3	0.44	
	Aug.	75.8	55.3	0.33	
	Sept.	77.2	50.5	0.37	
	Oct.	62.3	50.1	0.30	
	Nov.	56.9	50.8	0.27	
	Dec.	28.1	52.0	0.13	
2008	Jan.	60.7	53.4	0.27	
	Feb.	50.2	49.3	0.24	
	March	58.0	54.6	0.25	
	April	78.3	61.7	0.30	
	May	629.3	86.7	1.74	peak
	June	388.1	82.6	1.13	
	July	155.6	66.3	0.56	
	Aug.	129.5	65.2	0.48	
	Sept.	97.2	61.1	0.38	
	Oct.	76.4	58.7	0.31	
	Nov.	64.9	52.0	0.30	
	Dec.	73.0	55.7	0.31	
2009	Jan.	70.3	50.9	0.33	
	Feb.	60.3	48.2	0.30	
	March	62.1	61.7	0.24	
	April	88.0	63.1	0.33	
	May	180.9	70.2	0.62	peak
	June	146.3	64.6	0.54	
	July	104.4	61.6	0.41	
	Aug.	94.8	56.4	0.40	
	Sept.	89.2	57.0	0.38	
	Oct.	69.4	55.8	0.30	
	Nov.	70.9	55.0	0.31	
	Dec.	47.4	54.5	0.21	
2010	Jan.	66.7	55.5	0.29	
	Feb.	51.5	50.8	0.24	
	March	49.5	54.7	0.22	
	April	50.0	56.3	0.21	
	May	58.7	58.8	0.24	
	June	58.8	56.8	0.25	
	July	79.7	56.7	0.34	peak
	Aug.	54.7	56.2	0.23	
	Sept.	63.8	54.1	0.28	
	Oct.	54.6	55.4	0.24	
	Nov.	54.1	55.8	0.23	
	Dec.	64.5	54.6	0.28	
2011	Jan.	77.1	61.7	0.30	
	Feb.	69.8	54.6	0.31	
	March	94.7	61.4	0.37	
	April	119.6	65.6	0.44	
	May	433.0	84.4	1.23	peak
	June	328.4	80.0	0.98	
	July	159.9	79.3	0.48	
	Aug.	120.8	70.3	0.41	
	Sept.	92.4	60.4	0.37	
	Oct.	97.8	62.4	0.38	
	Nov.	66.8	58.4	0.27	
	Dec.	65.2	58.6	0.27	
2012	Jan.	74.9	58.4	0.31	
	Feb.	56.8	57.7	0.24	

LIME DEMAND TRACKING

Year	Month	Lime (tons)	KT flow (mg)	Lime Demand (g/L)	
	March	85.6	67.2	0.31	
	April	194.8	81.2	0.57	
	May	261.6	86.8	0.72	peak
	June	179.9	83.4	0.52	
	July	140.8	74.3	0.45	
	Aug.	118.0	68.9	0.41	
	Sept.	95.6	62.2	0.37	
	Oct.	89.0	60.0	0.36	
	Nov.	73.3	57.2	0.31	
	Dec.	74.8	61.8	0.29	
2013	Jan.	57.2	61.9	0.22	
	Feb.	64.5	59.4	0.26	
	March	71.7	66.2	0.26	
	April	96.9	69.6	0.33	
	May	126.2	71.5	0.42	peak
	June	94.1	64.6	0.35	
	July	91.2	62.8	0.35	
	Aug.	89.2	58.4	0.37	
	Sept.	65.2	58.0	0.27	
	Oct.	59.3	58.3	0.24	
	Nov.	50.9	56.2	0.22	
	Dec.	49.9	56.9	0.21	
2014	Jan.	38.7	57.4	0.16	
	Feb.	35.8	54.6	0.16	
	March	73.1	65.3	0.27	
	April	101.1	65.6	0.37	
	May	208.3	80.6	0.62	peak
	June	127.4	65.6	0.47	
	July	87.5	63.4	0.33	
	Aug.	81.1	61.5	0.32	
	Sept.	63.7	56.3	0.27	
	Oct.	53.1	60.6	0.21	
	Nov.	62.8	55.0	0.27	
	Dec.	54.6	59.7	0.22	
2015	Jan.	51.7	58.4	0.21	
	Feb.	61.0	59.7	0.24	
	March	83.1	64.4	0.31	
	April	94.8	63.0	0.36	peak
	May	73.3	62.0	0.28	
	June	69.7	65.3	0.26	
	July	83.6	55.6	0.36	
	Aug.	58.4	55.3	0.25	
	Sept.	55.3	53.9	0.25	
	Oct.	56.8	52.0	0.26	
	Nov.	46.3	49.8	0.22	
	Dec.	43.7	51.5	0.20	
2016	Jan.	24.2	52.2	0.11	
	Feb.	33.4	53.6	0.15	
	March	66.0	64.0	0.25	
	April	86.1	63.3	0.33	
	May	96.9	58.1	0.40	peak
	June	69.9	53.1	0.32	
	July	68.2	56.5	0.29	
	Aug.	53.7	53.2	0.24	
	Sept.	53.6	49.8	0.26	
	Oct.	49.8	52.4	0.23	
	Nov.	48.7	53.8	0.22	
	Dec.	48.3	52.0	0.22	
2017	Jan.	51.7	49.3	0.25	
	Feb.	46.9	53.7	0.21	
	March	140.0	59.0	0.57	
	April	174.5	61.9	0.68	
	May	246.6	84.2	0.70	peak
	June	143.5	73.1	0.47	
	July	141.6	69.4	0.49	
	Aug.	87.6	58.5	0.36	
	Sept.	100.8	67.4	0.36	
	Oct.	60.8	43.5	0.34	
	Nov.	91.0	72.4	0.30	
	Dec.	76.3	67.3	0.27	
2018	Jan.	63.6	56.5	0.27	

KELLOGG TUNNEL ZINC DATA

			Concentration (mg/L)											
Month	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Jan.		86	81	79	63	70	61	72	57	68	41	46	50	53	53
Feb.		86	91	96	55	72	57	95	58	68	41	68	52	50	68
March		94	116	86	65	68	53	86	58	69	58	81	63	124	
April		98	121	140	85	80	50	137	176	86	107	92	115	238	
May		105	231	179	318	136	57	377	215	150	177	87	138	206	
June		107	182	118	271	143	68	347	164	106	131	78	108	145	
July		90	144	111	198	117	75	181	136	87	87	75	81	97	
Aug.		87	112	92	132	94	79	130	110	86	76	66	76	98	
Sept.		84	107	80	107	76	81	132	107	75	66	63	68	75	
Oct.	59	81	100	88	99	75	70	86	70	67	63	54	52	53	
Nov.	66	79	88	88	104	63	57	95	71	70	55	44	52	58	
Dec.	67	62	78	65	76	59	61	88	69	54	49	55	50	60	
average	**64**	**88**	**121**	**102**	**131**	**88**	**64**	**152**	**108**	**82**	**79**	**67**	**75**	**105**	
lime usage (tons/day)		**2.59**	**3.23**	**2.76**	**4.78**	**3.24**	**2.16**	**4.31**	**3.93**	**2.46**	**2.70**	**1.99**	**1.93**	**3.60**	
Zinc Conc. Increase/Decrease			**37%**	**-16%**	**29%**	**-33%**	**-27%**	**138%**	**-29%**	**-24%**	**-4%**	**-15%**	**12%**	**39%**	
Lime Usage Increase/Decrease			**25%**	**-15%**	**73%**	**-32%**	**-33%**	**100%**	**-9%**	**-37%**	**10%**	**-26%**	**-3%**	**87%**	

KELLOGG TUNNEL ANNUAL DISCHARGE FLOWS 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Jan.	61,000,000	61,677,510	54,606,100	53,066,890	52,223,080	53,150,000	56,050,900	56,281,000	53,465,820	50,936,960
Feb.	57,600,000	45,584,000	52,840,000	46,493,470	48,306,920	49,860,000	51,188,000	50,511,300	49,282,209	48,146,111
March	60,730,000	57,740,360	50,452,060	60,162,290	59,852,720	58,073,000	56,332,830	65,443,650	54,578,130	61,712,540
April	68,680,000	54,846,000	65,583,230	63,335,350	50,715,310	53,775,350	72,039,280	66,636,500	61,690,530	63,055,350
May	**97,719,900**	57,501,901	76,082,410	63,335,350	53,245,000	54,181,650	72,027,000	63,203,308	86,680,760	70,233,580
June	69,800,000	55,835,590	67,299,960	59,532,434	50,451,170	51,750,000	68,385,600	57,981,410	82,622,590	64,623,180
July	63,698,850	53,652,330	64,820,120	66,252,746	56,538,980	55,255,000	64,054,000	58,282,900	66,324,500	61,535,000
Aug.	66,707,120	45,289,000	58,212,940	62,074,750	52,002,140	49,970,000	64,621,000	55,335,900	65,168,620	56,446,670
Sept.	55,797,530	50,276,020	60,140,460	43,789,000	49,208,020	49,987,000	54,515,270	50,471,870	61,074,020	57,006,430
Oct.	60,424,720	50,660,840	54,485,871	52,869,290	59,601,690	52,807,000	57,610,030	50,086,330	58,666,300	55,830,000
Nov.	53,408,660	50,660,840	51,072,259	47,600,000	51,948,000	50,722,600	55,191,700	50,779,040	52,041,780	54,956,800
Dec.	56,414,870	53,464,780	56,034,000	56,413,080	56,770,000	54,904,400	60,486,900	53,716,210	55,727,260	54,542,700
Totals	771,981,650	637,189,171	711,629,410	674,924,650	640,863,030	634,436,000	732,502,510	678,729,418	747,322,519	699,025,321

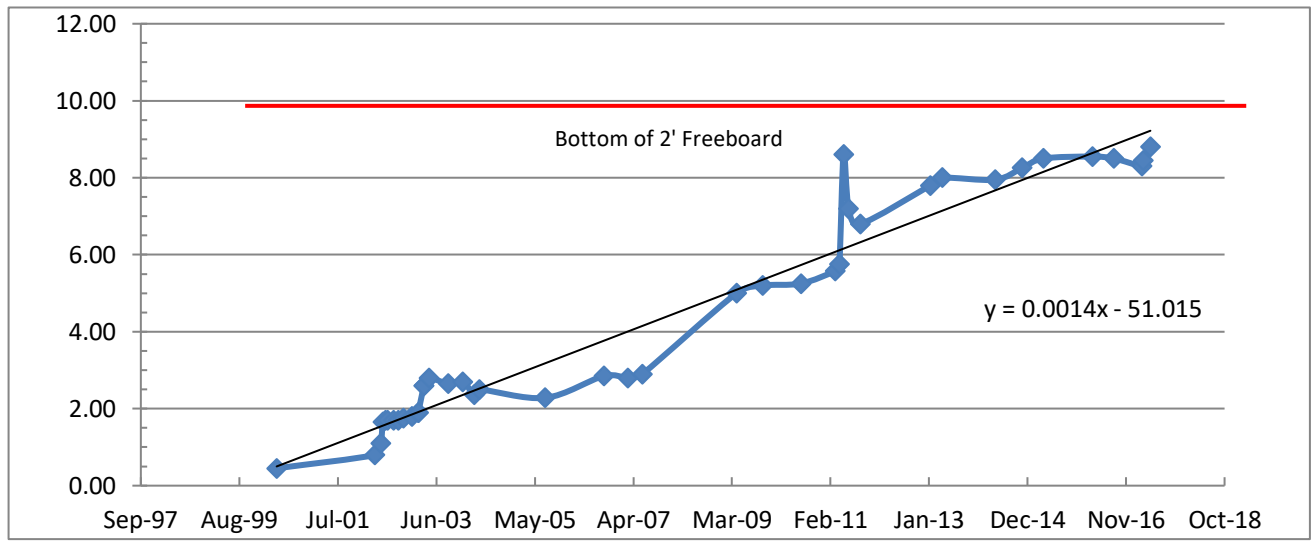
KELLOGG TUNNEL ANNUAL DISCHARGE FLOWS 2010-2019

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Jan.	55,503,180	61,797,170	58,434,610	**61,855,400**	57,478,450	58,440,540	52,196,750	49,352,650	56,555,500	
Feb.	50,819,910	54,556,227	57,763,170	59,383,290	54,607,950	**59,767,470**	53,694,400	53,675,440		
March	54,691,420	61,373,630	**67,236,650**	66,264,780	65,396,350	64,468,230	63,967,920	58,977,410		
April	56,255,340	65,687,340	**81,233,630**	69,619,100	65,618,770	63,056,840	63,323,620	61,947,620		
May	58,825,640	84,365,390	**86,826,340**	71,496,380	80,598,590	61,898,200	58,147,240	84,208,690		
June	56,770,200	79,985,540	**83,440,990**	64,663,900	65,623,330	56,368,540	53,149,810	73,144,700		
July	56,727,510	**79,346,330**	74,315,690	62,844,790	63,425,030	55,655,000	56,521,710	69,470,550		
Aug.	56,239,370	**70,377,570**	68,986,900	58,459,380	61,486,270	55,316,100	53,293,430	58,550,600		
Sept.	54,109,980	60,404,280	**62,270,300**	58,097,500	56,279,590	53,890,000	49,796,420	67,447,510		
Oct.	55,480,200	**62,403,480**	59,991,850	58,325,780	60,659,850	52,082,800	52,417,120	43,469,300		
Nov.	54,856,880	**58,430,700**	57,184,220	56,215,000	55,065,100	49,812,540	53,815,710	72,434,860		
Dec.	54,607,330	58,617,700	**61,750,390**	56,932,530	59,770,540	51,521,900	52,063,110	67,280,860		
Totals	664,886,960	797,345,357	**819,434,740**	**744,157,830**	**746,009,820**	**682,278,160**	**662,387,240**	**759,960,190**	**56,555,500**	**0**

Yellow indicates record monthly flow as well as record annual flow

Bunker Hill Sludge Pond
Sludge Staff Gauge Reading Summary

Date	Sludge Level (feet)	Estimated Sludge Elevation	Estimated Remaining Height to Road (feet)
05/19/00	0.45		
04/16/02	0.80		
05/28/02	1.10		
06/13/02	1.65		
07/01/02	1.70		
07/16/02	1.70		
08/27/02	1.70		
10/01/02	1.70		
11/06/02	1.75		
01/06/03	1.80		
02/19/03	1.90		
02/19/03	1.90		
03/31/03	2.60		
04/01/03	2.60		
05/07/03	2.80		
09/19/03	2.65		
01/01/04	2.70		
03/22/04	2.36		
04/29/04	2.50	2311	11.0
08/09/05	2.28	2310.8	11.2
09/30/06	2.85	2311.4	10.7
03/20/07	2.80	2311.3	10.7
6/30/2007	2.90	2311.4	10.6
4/30/2009	5.00	2313.5	8.50
10/31/2009	5.20	2313.7	8.30
7/31/2010	5.25	2313.8	8.25
3/31/2011	5.58	2314.1	7.92
4/30/2011	5.75	2314.3	7.75
5/30/2011	8.60	2317.1	4.90
7/5/2011	7.20	2315.7	6.30
9/26/2011	6.80	2315.3	6.70
2/4/2013	7.80	2316.3	5.70
4/30/2013	8.00	2316.5	5.50
5/12/2014	7.95	2316.5	5.55
11/20/2014	8.26	2316.8	5.24
4/20/2015	8.50	2317.0	5.00
4/1/2016	8.55	2317.1	4.95
9/1/2016	8.50	2317.0	5.00
3/20/2017	8.30	2316.8	5.20
3/28/2017	8.45	2317.0	5.05
5/18/2017	8.80	2317.3	4.70
7/31/2017	8.75	2317.3	4.75
11/15/2017	8.80	2317.3	4.70



6389	**8.35**	**Total Change, Days and Feet**
Note 3	0.48	Average Rise Per Year (Includes Lined Pond Cleanout), feet
	4.70	Estimated average remaining total height to perimeter road, feet
	2.0	Assumed desired end-of-life freeboard, feet
	2.7	Estimated available storage height, feet
	5.66	**Estimated Remaining Life (years)**
	7/12/2023	

Notes:
1) Pond perimeter road centerline elevation = 2322.0 feet from CIA as-builts Drawing C-28

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be include with the Daily Quality Control Report and monthly DMR.

Date: January 04, 2018 Inspected By: Gary Coast, Steve Brunner

Item Inspected	Condition	Comments
Channel Sections and Joints	**Good** / Poor	Check for cracks Ok
Channel Inlet Connection @ KT	**Good** / Poor	Check for cracks Ok
Channel Outlet/Pipeline Inlet	**Good** / Poor	Check for cracks Ok
Channel Bottom (during low flows)	**Good** / Poor	Concrete walls show signs of pitting Ok
Bottom Joints (during low flows)	**Good** / Poor	Ok
Trash Rack Assembly Rail Units	**Good** / Poor	Check for corrosion and bolt tightness Ok
Trash Racks	**Good** / Poor	Wood debris & grass clippings were removed
Parshall Flume	**Good** / Poor	Check fiberglass and joint connections Ok Flume staff gauge needs replaced

General Comments:

The Kellogg Tunnel flow at this time is 0.92 mgd (640 gpm), pH at this time is 2.50

The concrete flume walls are beginning to deteriorate approximately 6" up from the flume bottom.

The submerged area of the concrete is pitting and is now approximately 1/2" indented.

Alternate hand held staff gauge was used to verify flume staff gauge and flow meter readings.

Ultrasonic flow meter calibration was correct, no adjustments were needed.

No debris was removed from the mine discharge flume during this cleaning event.

No discussions occurred with any mine personnel.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be include with the Daily Quality Control Report and monthly DMR.

Date: January 11, 2018 Inspected By: Steve Brunner, Gary Coast

Item Inspected	Condition	Comments
Channel Sections and Joints	**Good** / Poor	Check for cracks Ok
Channel Inlet Connection @ KT	**Good** / Poor	Check for cracks Ok
Channel Outlet/Pipeline Inlet	**Good** / Poor	Check for cracks Ok
Channel Bottom (during low flows)	**Good** / Poor	Concrete walls show signs of pitting/corrosion
Bottom Joints (during low flows)	**Good** / Poor	Ok
Trash Rack Assembly Rail Units	**Good** / Poor	Check for corrosion and bolt tightness Ok
Trash Racks	**Good** / Poor	Wood debris was removed
Parshall Flume	**Good** / Poor	Check fiberglass and joint connections Ok Flume staff gauge needs replaced

General Comments:

The Kellogg Tunnel flow at this time is 1.96 mgd (1314 gpm), pH at this time is 2.95.

The concrete flume walls are beginning to deteriorate approximately 6" up from the flume bottom.

The submerged area of the concrete is pitting and is now approximately 1/2" indented.

Alternate hand held staff gauge was used to verify flume staff gauge and flow meter readings.

Ultrasonic flow meter calibration was correct, no adjustments were needed.

Operators removed wood debris from the trash racks during this cleaning event.

Mine personnel stated the pump will remain off until Friday January 12th.

Mine personnel stated they want to move the flow meter building in the future. No schedule yet.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be include with the Daily Quality Control Report and monthly DMR.

Date: January 18, 2018 Inspected By: Gary Fulton, Steve Brunner

Item Inspected	Condition	Comments
Channel Sections and Joints	**Good** / Poor	Check for cracks Ok
Channel Inlet Connection @ KT	**Good** / Poor	Check for cracks Ok
Channel Outlet/Pipeline Inlet	**Good** / Poor	Check for cracks Ok
Channel Bottom (during low flows)	**Good** / Poor	Concrete walls show signs of pitting/corrosion
Bottom Joints (during low flows)	**Good** / Poor	Ok
Trash Rack Assembly Rail Units	**Good** / Poor	Check for corrosion and bolt tightness Ok
Trash Racks	**Good** / Poor	Wood debris was removed from both racks
Parshall Flume	**Good** / Poor	Check fiberglass and joint connections Ok Flume staff gauge needs replaced

General Comments:

The Kellogg Tunnel flow at this time is 1.04 mgd (722 gpm), pH at this time is 2.32.

The concrete flume walls are beginning to deteriorate approximately 6" up from the flume bottom.

The submerged area of the concrete is pitting and is now approximately 1/2" indented.

Alternate hand held staff gauge was used to verify flume staff gauge and flow meter readings.

Ultrasonic flow meter calibration was correct, no adjustments were needed.

No debris was removed from the mine discharge flume during this cleaning event.

No discussions occurred with any mine personnel.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be include with the Daily Quality Control Report and monthly DMR.

Date: January 25, 2017 Inspected By: Gary Coast, Steve Brunner

Item Inspected	Condition	Comments
Channel Sections and Joints	**Good** / Poor	Check for cracks Ok
Channel Inlet Connection @ KT	**Good** / Poor	Check for cracks Ok
Channel Outlet/Pipeline Inlet	**Good** / Poor	Check for cracks Ok
Channel Bottom (during low flows)	**Good** / Poor	Concrete walls show signs of pitting/corrosion
Bottom Joints (during low flows)	**Good** / Poor	Ok
Trash Rack Assembly Rail Units	**Good** / Poor	Check for corrosion and bolt tightness Ok
Trash Racks	**Good** / Poor	No debris ok
Parshall Flume	**Good** / Poor	Check fiberglass and joint connections Ok Flume staff gauge needs replaced

General Comments:

The Kellogg Tunnel flow at this time is 2.6 mgd (1805 gpm), pH at this time is 2.92.

The concrete flume walls are beginning to deteriorate approximately 6" up from the flume bottom.

The submerged area of the concrete is pitting and is now approximately 1/2" indented.

Alternate hand held staff gauge was used to verify flume staff gauge and flow meter readings.

Ultrasonic flow meter calibration was correct, no adjustments were needed.

No debris was removed from the mine discharge flume during this cleaning event.

No discussions occurred with any of the mine personnel.

* Note: KT flow meter building has no power supply at this time. Mine is performing electrical work.